L 17999-66
ACC NR: AP6007936

SUB CODE: 21/ SUBM DATE: none/ ORIG REF: 004/ ATD PRESS: 4213

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L 17999-66 EWT(d)/EWT(m)/EWP(f)/T/EWP(t) IJP(c) JD/WB/WE

ACC NR: AP6007936 SOURCE CODE: UR/0318/66/000/001/0007/0009

AUTHOR: Sych, Yu. I.; Makhov, A. F.; Stekhun, A. I.; Rogacheva, O. I.

ORG: none

TITLE: Improvements in the refining technology of fuels for jet engines

SOURCE: Neftepererabotka i neftekhimiya, no. 1, 1966, 7-9

TOPIC TAGS: jet fuel, fuel contamination

ABSTRACT: Improvements have been introduced in the continuous alkaline- and water-wash process for jet fuel refining which involves removal of hydrogen sulfide, organic acids, and some mercaptans. The old process had the disadvantage that alkaline and aqueous emulsions were formed in the respective wash steps and were entrained downstream, causing certain difficulties including fuel contamination with mechanical particles found in technical water. The main improvement consisted in the installation of glass-wool filters after each of the wash steps, which break up the emulsions and remove mechanical contaminants. A flow sheet of the improved process is given in the source. The improvements made it possible to produce high-purity jet fuel which meets GOST 10227-62 specifications and whose mechanical-contaminant content does not exceed 0.0002—0.0003% (determined as per GOST 10577-63). It is noted that removal of contaminants from jet fuels improves thermal stability, decreases corrosivity and filter clogging, and therefore improves aircraft operational reliability. Orig. art. has: 1 figure and 1 table. [SM]

Card 1/2 UDC: 665.664.22:621.45—6

MAKHOV, A.F.; SUDOVIKOV, A.D.; MAKSIMENKO, M.Z.

Still with spiral nonperturbent coil for heating, reforming, and pyrolysis of petroleum products. Mash. i neft. obor. no.5: 31-33 '63. (MIRA 17:8)

1. Novoufimskiy neftepererabatyvayushchiy zavod.

MAKHOV, A.F.; OBUKHOV, A.S.; GIMBERG, S.V.; NOGACHEVA, O.I.

Trap-product refining. Nefteper. i neftekhim. no.2:18-22 '63. (MIRA 17:1)

1. Novo-Ufimskiy neftepererabatyvayushchiy zavod.

Penetration of Electrons Into Solids. III. Absorption of the Energy of the Electron Beam

84089
S/181/60/002/009/021/036
B004/B056

$w(\chi) = 1 - \int_0^1 \exp\left[-\chi^p/(1 - \xi^n)^p\right] d\xi$ (15). The function $w(\chi)$ is represented for aluminum and germanium in Fig. 6, and for bismuth in Fig. 7. More than 80% of the energy is absorbed in layers having a thickness of $\chi \simeq 1$, the remainder of the energy in layers which practically do not exceed $\chi = 2$, with the exception of bismuth, where 5% of the energy is still left at $\chi = 2$. Fig. 8 compares these results with the data obtained by J. R. Young (Ref. 3). The divergence is explained by the fact that Young assumed an isotropic electron energy distribution. There are 8 figures and 5 references: 1 Soviet, 3 US, and 1 British.

ASSOCIATION: Leningradskiy institut tochnoy mekhaniki i optiki (Leningrad Institute of Precision Mechanics and Optics)

SUBMITTED: September 19, 1959

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1.0, and Fig. 2 the function $G_0(\xi)$ for other values of χ. A considerable spread of electron energy is found. For the average electron energy at the depth x the following relations are derived:

$$W_\eta = N_0 E_0 \int_0^1 \exp\left[\left(-\chi^p/(1-\xi^n)\right)^p\right] d\xi \quad (11)$$ and, expressed in fractions of E_0:

$$\bar{\xi}(\chi) = (\bar{E}_x/E_0) = \left\{\int_0^1 \exp\left(-\chi^p/(1-\xi^n)\right)^p d\xi\right\}/\eta \quad (12)$$. Fig. 3 shows the diagram $\xi(\chi)$ for aluminum (p = 2, n = 1.68) and germanium; Fig. 4 for bismuth (p = 1, n = 1.44). It follows from Fig. 5 that $y(z)$, where $y = \ln|\ln\xi|$, $z = \ln\chi$ develops linearly for Al, Ge, and Bi. In light and medium-weight elements, the average electron energy decreases nearly exponentially with increasing depth. In heavy elements, energy decrease is slower. For the absorption of energy the following relations are written down: $w(\chi) = 1 - \eta(\chi)\xi(\chi)$ (14) and, using (12),

depth x corresponds to a uniform energy range. The number N_i of electrons whose energy is between $E_x = E_{xi} \geqslant E_{x\,min}$ and $E_{x\,max}$ is expressed by $N_i = \int_{E_{xi}}^{E_{x\,max}} g dE_x$. The expression is required which establishes a connection between N_i and the minimum energy of the electrons at the depth x. From the total number $N_0\eta(x)$ of electrons, the group $N_0\eta_i(x_i)$ is selected for which the transverse ranges satisfy the condition $R_i \geqslant x_i$, $x_i \geqslant x$. By means of equation (3) and by substituting $\chi = x/X$, $\xi = E_{xi}/E_0 = E_x/E_0$ one obtains: $N_i = N_0 \exp\left\{-\left[\chi/(1-\xi^n)\right]^p\right\}$; the normal energy distribution function of electrons: $G = (gE_0/N_0) = pn\chi^p(\xi^{n-1}/(1-\xi^n)^{p+1} \cdot \exp\left[\chi/(1-\xi^n)\right]^p$ (8); as well as the function normalized to unity $G_0 = G/\eta$ (10). For Ge Fig. 1 shows $G(\xi)$ ($p = 2$, $n = 1.47$) at $\chi = 0.1$; 0.2; 0.3; 0.4; 0.6; 0.8;

S/181/60/002/009/021/036
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9.4300 (1035, 1138, 1143)

AUTHOR: Makhov, A. F.

TITLE: Penetration of Electrons Into Solids. III. Absorption of the Energy of the Electron Beam

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 9, pp. 2176 - 2184

TEXT: The author refers to his calculation of electron-beam intensity and of the transverse electron range, which he described in Ref. 1. He found that within a wide energy range, the relative number η of electrons having a transverse range R is expressed by $\eta = \exp(-R/X^p)$ (1), where p = 2 for Al, Si, Cu, Ge, and Al_2O_3, p = 1 for Pb and Bi; $X = CE_0^n$ (2). The constants C and n were determined for the substances investigated. It was further proved that for $R = |\ln\eta|^{1/p} X(E_0)$ (3), η = const must hold. The energy distribution of the electrons is then investigated. N_0 is the absolute intensity of the electron beam inciding perpendicularly upon the solid, and E_0 the initial energy. The distribution function $g(N_0, E_0, x, E_x)$ represents the number of electrons whose energy E_x at the

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Penetration of Electrons Into Solids. II. The Distribution of Electrons in the Depth

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B004/B056

substances investigated the absorption maximum x_{max} is $\simeq$ 0.7 X. Up to x_{max} 40%, and beyond x_{max} 60% of the electrons are absorbed. The maximum depth into which an electron beam penetrates is 2X (absorption of 98% of the electrons). For Bi, the normal function is a steadily decreasing exponential curve. Absorption occurs already with considerable intensity at a low depth. Fig. 2 shows the distribution function $f(x,E_0)$ for E_0 = 4, 8, 12, and 16 kev. A joint paper by the author and A. Ya. Vyatskin (Ref. 3) is mentioned. There are 2 figures and 3 Soviet references.

ASSOCIATION: Leningradskiy institut tochnoy mekhaniki i optiki (Leningrad Institute of Precision Mechanics and Optics)

SUBMITTED: September 9, 1959

Card 2/2

84079

S/181/60/002/009/020/036
B004/B056

9.4300 (1035, 1138, 1143)

AUTHOR: Makhov, A. F.

TITLE: Penetration of Electrons Into Solids. II. The Distribution of Electrons in the Depth

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 9, pp. 2172 - 2175

TEXT: In a previous paper (Ref. 1), the equation $\eta = \exp\left[-(x/CE_0^n)^p\right]$ (1) was found for the number η of electrons penetrating into solids up to a depth x. E_0 is the initial electron energy, C,n,p are constants which were empirically found for Al, Si, Cu, Ge, Bi, and Al_2O_3. The equation for the relative number γ of electrons absorbed in a layer of the thickness x may be derived from η. From equation (1) and the distribution function $f(x,E_0)$ the normal function $q(\chi) = p\chi^{p-1} \exp(-\chi^p)$ (5) is obtained, introducing $X = CE_0^n$, $\chi = x/X$, and $f = q/X$. Fig. 1 shows this function for Al, Si, Cu, Ge, Al_2O_3 (p = 2), and Bi (p = 1). For the

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also at high electron energies (960 kev). The function $X(E_0)$ follows in a wide interval the equation $X = CE_0^n$ (4) (Fig. 10). C, n are constants given in a table for the substances investigated. From equations (3) and (4) $\eta(x,E_0) = \exp\left[-(x/CE_0^n)^p\right]$ (5) is derived (Fig. 1), whereas for the normalized intensity curve $\eta(\varepsilon) = \exp(-\varepsilon^{-k})$ (6) and $k = np$ (Figs. 5,6) are derived. For the penetration depth x a connection with the transverse path R of the electrons is established: $\eta(R,X) = \exp\left[-(R/X)^p\right]$ (7) and $R = |\ln\eta|^{1/p}X$ (8). R is uniquely determined only at η = const. The values for R obtained by extrapolation, which are mentioned in publications, differ so much, and are useless from a physical viewpoint, because these conditions were disregarded. There are 10 figures, 1 table, and 9 references: 2 Soviet, 5 US, 1 British, and 1 German.

ASSOCIATION: Leningradskiy institut tochnoy mekhaniki i optiki (Leningrad Institute of Precision Mechanics and Optics)

SUBMITTED: September 9, 1959

different E_o. η_n is then selected as being equal to 1/e. The values x_n corresponding to this value are denoted by X, so that the new argument is $\chi = x/X$. Fig. 2 shows the normalization of the family of curves from Fig. 1, and Fig. 3 shows the results obtained for Al, Si, Cu, Ge, Al_2O_3, and Fig. 4 for Bi. The same method is employed for the family of curves $\eta(E_o)$: Introduction of the argument $\varepsilon_n = E_o/E_n$ on the condition $\eta(x,E_n) = \eta_n = \text{const}$ (2). η_n is again chosen as 1/e. Figs. 5 and 6 show the normalization for Ge and Bi. As the penetration of the electron beam into solids has statistical character, either the form of the Gaussian curve or an exponential curve corresponding to the Lenard law was expected for the $\eta(\chi)$ curves. For Ge Fig. 7 shows $y = \ln|\ln\eta|$ as a function of $z = \ln\chi$. The straight line obtained is $y = pz$. Herefrom it follows that $\eta(\chi) = \exp(-\chi^p)$ (3). As may be seen from Figs. 2-4, $p = 2$ for Al, Si, Cu, Ge, Al_2O_3, but for Bi $p = 1$. In the lighter elements $\eta(\chi)$ is the positive branch of the Gaussian curve; in heavy elements it is a Lenard exponential curve. The same holds, as shown by Figs. 8 and 9.

84078
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B004/B056

9.4300 (1035,1138,1143)

AUTHOR: Makhov, A. F.

TITLE: The Penetration of Electrons into Solids. I. The Intensity of the Electron Beam. Transverse Ranges of Electrons

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 9, pp. 2161 - 2171

TEXT: In 1958, the author, in collaboration with A. Ya. Vyatskin (Ref.2), published measurements of the total intensity of electron beams sent through films of Si, Cu, Ge, and Bi with an energy of from 1.5 to 2.2 kev. In the present paper, the author develops a method of analyzing these data. For this purpose, the following definitions are given: the intensity η of the beam sent through the film is a function of the film thickness x and the initial energy E_0. When sending the beam through the film, the family of curves $\eta(E_0)$ is directly recorded, and only herefrom is the family of curves $\eta(x)$ obtained. Fig. 1 shows $\eta(x)$ for germanium. The author carries out a normalization of the family of curves, so that it is represented by one single curve. The new argument $\eta_n = x/x_n$ is introduced, where x_n satisfies the condition $\eta(x_n, E_0) = \eta_n = \text{const}$ (1) for

Card 1/3

VYATSKIN, A.Ya.; MAKHOV, A.F.

Absorption and range of electrons in solids. Fiz. tver. tela 2 no.5:887-893 My '60. (MIRA 13:10)

1. Institut tochnoy mekhaniki i optiki, Leningrad.
(Electrons)

MAKHOV, A. F. Cand Phys-Math Sci --- "Study and analysis of the integral intensity, [redacted] absorption, and spectra of [redacted] transverse [redacted] of electrons in certain solid bodies." Len, 1960. (Min of Higher and Specialized Secondary Education RSFSR. Len Inst of Precision Mechanics and Optics) (KL, 1-61, 180)

66284

On the Universal Character of the Penetration of Electrons Into Solids

SOV/181-1-11-19/27

SUBMITTED: May 30, 1959

Card 3/3

a purely experimental manner if the reduced coordinate $\chi = x/x_n$ is substituted for x. The normalized curve $\eta(\chi)$ thus obtained for Al at medium and high energies is given in figure 1. Figure 2 shows the curves for Bi and Pb at medium and high energies respectively. For both pairs the experimental points practically lie on the same curve, the observed stray of values being only natural. The curves $\eta(\chi)$ can be described by functions of the kind $\eta(\chi) = \exp(-\chi^p)$, where the constant p is dependent on the material investigated. p is close to 2 for Al, Si, Cu, Ge, and Al_2O_3, and close to unity for Bi and Pb. The quantity x_e^p is equal to the mean p^{th} power of the transversal range of the electrons $\overline{R^p}$. Thus, $R = |\ln\eta|^{1/p} x_e(E_o)$. x_e depends only on E_o, and $|\ln\eta|^{1/p}$ is a constant factor, which varies with the electron group. Finally, the results are discussed briefly. There are 2 figures and 6 references, 2 of which are Soviet.

Card 2/3

~~24(6),21(8)~~ 24.6510 66284

AUTHOR: Makhov, A.F. SOV/181-1-11-19/27

TITLE: On the Universal Character of the Penetration of Electrons Into Solids

PERIODICAL: Fizika tverdogo tela, 1959, Vol 1, Nr 11, pp 1749-1751 (USSR)

ABSTRACT: The author first discusses two papers by Seliger (Ref 1) and Agu et al. (Ref 2). In 1955, Seliger investigated the penetration of thin layers of Al, Ag, Sn, Au, and Pb by electrons and positrons at energies ranging from 150 to 960 kev, and studied the decrease in energy $\eta_{E_0}(x)$ with increasing depth x as a function of the primary energy E_0 (according to Bethe's theory of ionization losses). It was shown in reference 2 by using Al as an example, and working with electron energies within the above range, that a universal law can be derived by normalizing the η-curves. Using the data given in the publications of references 3-6 as a basis, the author investigates the conditions at lower electron energies (0.5 - 3) - (12 - 40) kev for Al, Si, Ge, Bi, Cu, and Al_2O_3. The normalization can be carried out in

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The Retarding of Electrons in Some Metals and Semiconductors

diation the thickness of these films was increased by spraying them with an additional quantity of the substance. The production of the films with the initial thickness took place according to the method generally described in Ref 9. The passage of the electrons through the Cu-, Bi-, Ge- and Si-films was measured. For these substances the retardation law in the domain of $2keV < E < 10 - 16$ keV was found in the form of $d = CE^{1,4}$. C denotes a constant. E denotes the electron energy, d denotes the path length of the electrons. There are 6 figures, 1 table, and 9 references, 5 of which are Soviet.

ASSOCIATION: Leningradskiy institut tochnoy mekhaniki i optiki (Leningrad Institute for Fine Mechanics and Optics)

SUBMITTED: July 23, 1957

57-28-4-8/39

AUTHORS: Vyatskin, A. Ya., Makhov, A. F.

TITLE: The Retarding of Electrons in Some Metals and Semiconductors (Tormozheniye elektronov v nekotorykh metallakh i poluprovodnikakh)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 4, pp.740-747 (USSR)

ABSTRACT: The retarding of electrons of medium energy was here investigated according to the method of the irradiation of thin free films of the investigated material. Curves of the dependence of the current passing through the film upon the energy of the impinging electrons were plotted. The extrapolation of these curves until their point of intersection with the energy-axis determines the path length of electrons which is equal to the thickness of film. The films needed for the measurement with a thickness of from some mμ to some μ were obtained by means of evaporation in a vacuum. This took place in two stages: at first films with the initial thickness (d_o^*) were produced and fixed to the target. After irra-

Card 1/2

Makhov, A.F.

66179

~~9(2,7)~~ 24.2460 SOV/146-58-5-2/24

AUTHORS: Vyatskiy, A.Ya., Candidate of Physical Mathematical Sciences, Docent, Gutkin, A.A., Engineer, and Makhov, A.F., Assistant

TITLE: Germanium Phototriode

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy - Priborostroyeniye, 1958, Nr 5, pp 11-13 (USSR)

ABSTRACT: The article gives preliminary results of tests on flat germanium phototriodes. They are examined for their sensitivity. Qualities of voltage and amperage under varying lighting are also taken into consideration. Zh.I. Alferov, B.M. Konovalenko, S.M. Ryvkin, V.M. Tuchkevich, and A.I. Uvarov have done extensive studies in the field of flat hermanium phototriodes. Figure 1 shows the lighting layout of the germanium phototriode. Figure 3 shows statical volt-ampere characteristics of the phototriode under varying lighting. (1 - no light; 2 - lighting of 25 lux; 3 - lighting of 44 lux; 4 - lighting of 57 lux; 5 - lighting of 80 lux, and 6 - lighting of 124 lux). Figure 3 illustrates the distribution of sensitivity on the lighted surface of the phototriode. Finally, the authors investigate measurement of sensitivity in connection with the location of the lighted spot on the surface of the phototriode. There are 2 graphs, 1 layout and 2 Soviet sources.

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ASSOCIATION: Leningradskiy institut tochnoy mekhaniki i optiki (Leningrad Institute of Fine Mechanics and Optics)

Card 2/2

SOV/137-58-9-19722

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 228 (USSR)

AUTHORS: Makhov, A.F.; Gutkin, A.A.

TITLE: Investigation of the Retardation of Electrons of Be and Ge by the Method of Secondary Emission (Issledovaniye tormozheniya elektronov v Be i Ge metodom vtorichnoy emissii)

PERIODICAL: Izv. vyssh. uchebn. zavedeniy. Fizika, 1958, Nr 1, pp 113-119

ABSTRACT. Results are adduced of an investigation of the secondary emission (SE) of thin films of Be, applied in a vacuum on a Ni base (I) and of thin films of Ge applied on Be (II). The coefficient of SE was determined for energies of primary electrons (PE) E_n ranging from 100 to 4000 ev. It was discovered that for I the $\sigma = f(E_n)$ curves have a minimum, the appearance of which can be explained by a large portion of the fast electrons emitted by the base when it is reached by the PE beam. From the relationships $\sigma = f(E_n)$ for I and $\sigma = f(\theta)$ (θ being the thickness of the Be layer) at various energies of the PE beam for II, the laws governing the retardation of electrons with energies from 1 to 3.5 ev were obtained. It is established that the law for the retardation for I and II has the form of $d \sim E^{1.4}$. R.O.

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1. Beryllium films 2. Germanium films 3. Secondary emission 4. Electrons --Energy

Makhov, A.F.

USSR/Electronics - Semiconductor Devices and Photocells, H-8

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 35212

Author: Sominskiy, M. S., Makhov, A. F., Melik-Davtyan, R. L.

Institution: None

Title: On the Effect of Electrodes on the Rectifying Properties of a Crystal Detector.

Original Periodical: Sb. statey Leningr. in-ta. tochnoy mekhan. i optiki, 1955, No 18 142-153

Abstract: Detailed investigation of the effect of pressure, material, shape, and dimensions of the upper electrodes, and also of the effect of the method of preparation of the lower electrode on the rectifying properties of a Germanium detector. The optimum values of the above electrode parameters are established. Bibliography 9 titles.

Card 1/1

BOGEMSKIY, G.D. [translator]; MAKHOV, A.B. [translator]; SEKUN, G.A., red.; PORYADINA, I.Z., red.; KHOMYAKOV, A.D., tekhn.red.

[Workers and technological progress; materials of the conference in the Gramshi Institute in Rome on June 29-30 and July 1, 1956 on "Technical and organizational transformations and changes in working conditions of Italian enterprises."] Trudiashchiesia i tekhnicheskii progress; materialy soveshchaniia v Institute im. Gramshi v Rime 29-30 iiunia i 1 iiulia 1956 g. po voprosu: "O tekhnicheskikh i organizatsionnykh preobrazovaniiakh i izmeneniiakh v usloviiakh truda na ital'ianskikh predpriiatiiakh." Moskva, Izd-vo inostr.lit-ry, 1959. 359 p. (Translated from the Italian) (MIRA 13:1)

(Italy--Industries)
(Italy--Labor and laboring classes)

MAKHOV, A.

The S-562 unit for applying ground coats. Stroitel' no.1:29 Ja '61. (MIRA 14:2)

(Painting, Industrial)

MAKHOTKINA, Ye.N., red.; SHVETSOV, G.V., tekhn.red.

[Technical instructions for making out annual reports of machine-tractor stations in 1957] Tekhnicheskie ukazaniia po zapolneniiu tablits godovogo otcheta mashinno-traktornykh stantsii za 1957. god. Moskva, 1957. 42 p. (MIRA 11:5)

1. Russia (1923- U.S.S.R.) Ministerstvo sel'skogo khoziaistva. TSentral'naya bukhgalteriia.
(Machine-tractor stations--Accounting)

POVOROZHENKO, Vladimir Vasil'yevich, prof., doktor tekhn.nauk; KOSTENKO, Ivan Georgiyevich, kand.tekhn.nauk; MAKHOTKIN, Nikolay Aleksandrovich, inzh.; RUMYANTSEV, Sergey Mikhaylovich, inzh.; PARAKHONSKIY, Boris Mikhaylovich, kand.ekon. nauk; SOLOV'YEV, Ivan Fomich, kand.tekhn.nauk; BAKAYEV, V.G., doktor tekhn.nauk, red.; CHERNOMORDIK, G.I., doktor tekhn.nauk, nauchnyy red.; IRKHIN, A.P., kand.tekhn.nauk, nauchnyy red.; KUDRYAVTSEV, A.S., doktor ekon.nauk, nauchnyy red.; GLADTSINOV, B.N., kand.tekhn.nauk, nauchnyy red.; EYGEL', I.Yu., red.; LAVRENOVA, N.B., tekhn.red.

[Transportation in the U.S.S.R.] Transport SSSR. Pod obshchei red. V.G.Bakaeva. Moskva, Izd-vo "Morskoi transport," 1960. 536 p. (MIRA 13:7)

(Transportation)

MAKHOTKIN, N.

Organizing operation of the river fleet by sections (arms). Mor. i rech.flot 14 no. 8:9-12 Ag '54. (MLRA 7:8)

1. Zamestitel' nachal'nika Upravleniya perevozok Ministerstva morskogo i rechnogo flota.
(Inland water transportation)

MAKHOTKIN, N. A.

Dnepro-Bugskii kanal. /The Dnieper-Bug canal/. (Vodnyi transport, 1948, no. 5, p. 9)
DLC:HE561.R8

SO: Soviet Transportation and Communication. A Bibliography, Library of Congress Reference Department, Washington, 1952, Unclassified.

MAKHOTKIN, N. A.

Oginski kanal. [Oginskii Canal.] (His Organizatsiia sudokhodstva na rekakh Zapadnoi Belorussii i Zapadnoi Ukrainy. Vodnyi transport, 1940, no. 5, p. 9).
DLC: HE561.R8

SO: Soviet Transportation and Communications, A Bibliography, Library of Congress, Reference Department, Washington, 1952, Unclassified.

MAKHOTKIN, N. A.

Organizatsiia sudokhodstva na rekakh zapadnoi Belorussii i zapadnoi Ukrainy.
/Organization of river navigation in western White Russia and western Ukraine/.
(Vodnyi transport, 1940, no. 5, p. 8-11, map) DLC: HE561.R8

SO: Soviet Transportation and Communication, A Bibliography, Library of Congress, Reference Department, Washington, 1952, Unclassified.

MAKHOTKIN, N., inzh.

Achieve maximum development of combined waterway and railroad transportation. Rech. transp. 21 no.8:9-10 Ag '62.
(MIRA 18:9)

MAKHOTKIN, N.; KUZ'MIN, V., starshiy nauchnyy sotrudnik; ZHIRNOV, Ya., starshiy nauchnyy sotrudnik

Development of the shipping of round timber in the Volga-Kama basin. Rech. transp. 24 no.3:16-17 '65. (MIRA 18:5)

1. Zamestitel' nachal'nika Upravleniya gruzovoy i kommercheskoy raboty Ministerstva rechnogo flota (for Makhotkin). 2. Gor'kovskiy institut inzhenerov vodnogo transporta (for Kuz'min, Zhirnov).

MAKHOTKIN, N.; MALAKHOV, K.

For coordinated work on the part of railroad and inland transportation workers. Rech. transp. 22 no.11:10-11 N '63. (MIRA 16:12)

1. Zamestitel' nachal'nika Upravleniya gruzovoy i kommercheskoy raboty Ministerstva rechnogo flota (for Makhotkin). 2. Zamestitel' nachal'nika Glavnogo gruzovogo upravleniya Ministerstva putey soobshcheniya (for Malakhov).

KLOCHKO, N.A.; MAKHOTKIN, M.V; MOYNOVA, N.V.

Selecting a type of steel and conditions of brazing hard alloy tips in the manufacture of bits for air hammers. Gor. shur. no. 12:41-44 D '65. (MIRA 18:12)

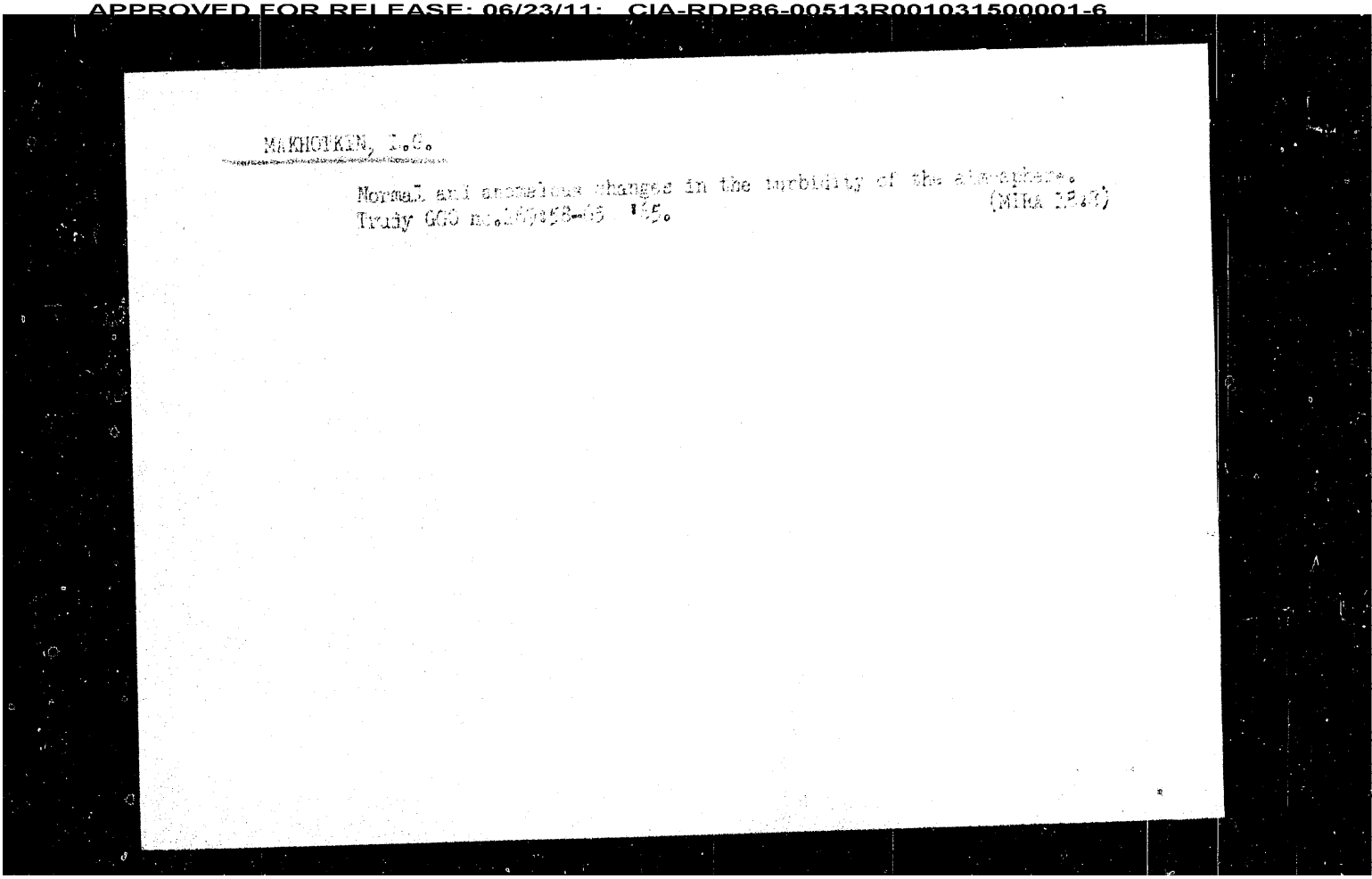
1. Vsesoyuznyy nauchno-issledovatel'skiy institut tverdykh splavov, Moskva.

KLOCHKO, N.A., inzh.; MAKHOTKIN, M.V., inzh.; SUSLOV, Ye. I., inzh.

Welding of hard alloy tips with intermediate layers onto detachable rock drill bits. Gor. zhur. no.4:33-35 Ap '60. (MIRA 14:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut tverdykh splavov, Moskva.

(Rock drills)
(Hard facing)



MAKHOTKIN, I.S.

Normal and anomalous changes in the turbidity of the atmosphere.
Trudy GGO no.[illegible] 155. (MIRA 17:6)

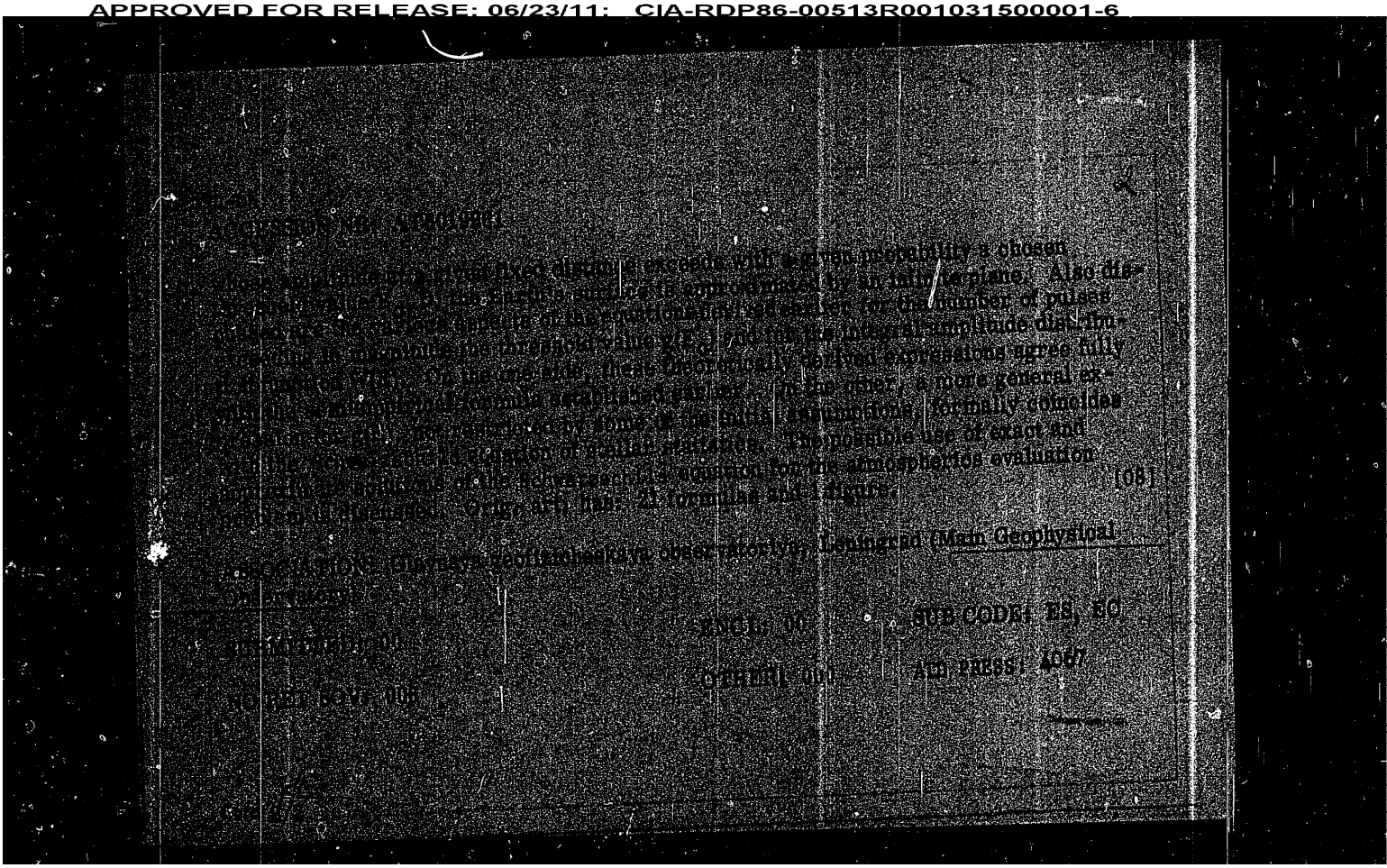
MAKHOTKIN, L.G.

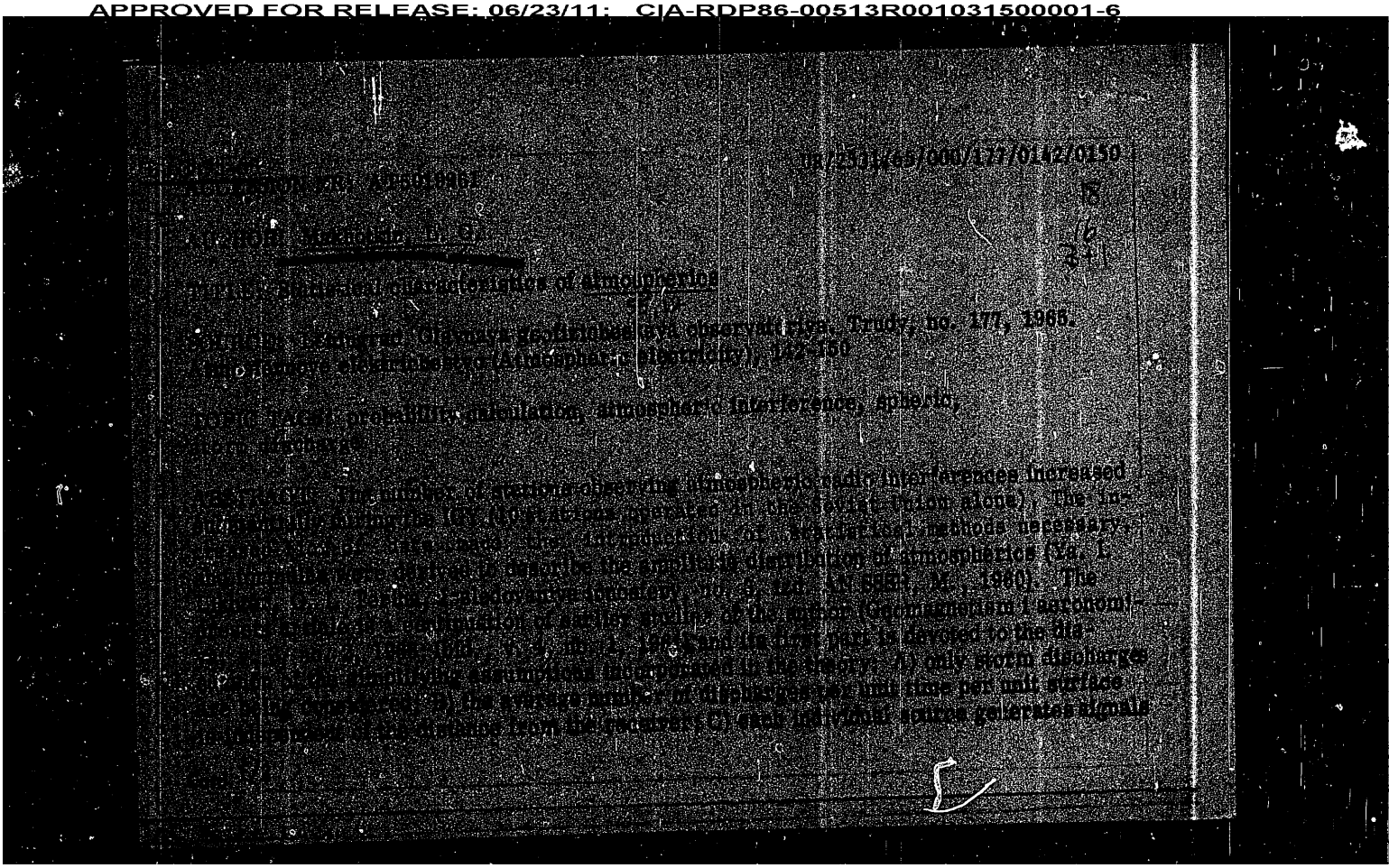
Change in the electrostatic field intensity depending on the distance to the lighting discharge. Izv. AN SSSR. Fiz. atm. i okeana 1 no.2:230-232 F '65. (MIRA 18:5)

1. Glavnaya geofizicheskaya observatoriya imeni Voyeykova.

MAKHOTKIN, L.G.; ASTASHENKO, A.I.

Physical principles of methods of locating the seats of origin of thunderstorms and their technical realization. Trudy GGO no.177:3-9 '65. (MIRA 18:8)





ACCESSION NR: AP4013152

3800). The amplitude of most static at this distance was less than 0.1 v/m. Plots were made for amplitude change with distance and also for reproducibility. The logarithmic relationship was clearly demonstrated; a comparison of results from the sources in different geographic localities led the author to conclude that the average values of standard deviation are about the same for all distances. The average standard deviation proved to be about 7-8 decibels. "The author thanks A. I. Astashenko, who directed the supplementary observations, B. K. In'kov, who prepared the selective data on near thunder storms, and technicians of the Leningradskiy radiogoniometricheskogo punkta (Leningrad Radio-Direction-Finder Station), who participated in the observations." Orig. art. has: 3 figures.

ASSOCIATION: Glavnaya geofizicheskaya observatoriya (Main Geophysical Observatory)

SUBMITTED: 01Jul63 DATE ACQ: 02Mar64 ENCL: 00

SUB CODE: ES, GP NO REF SOV: 001 OTHER: 003

Card 2/2

ACCESSION NR: AP4013152 S/0203/64/004/001/0200/0202

AUTHOR: Makhotkin, L. G.

TITLE: Determining the parameters of the amplitude distribution of static generated by an isolated source

SOURCE: Geomagnetizm i aeronomiya, v. 4, no. 1, 1964, 200-202

TOPIC TAGS: static, electrostatic fluxmeter, atmospheric static, amplitude distribution

ABSTRACT: The amplitude distribution of static generated by an individual source is completely described logarithmically by a normal law based on the parameter of standard deviation. But observed values of standard deviation show a range from 4 to 12 decibels. Because this variation may be due to secondary factors, it is desirable to obtain supplementary data for determining the standard deviation. For this purpose the author obtained data from four groups of static sources: 1) those at distances of 600 to 1200 km (average of 900 km), 2) distances of 1500 to 2500 (average 2100), 3) 2600 to 3200 (average 2800), and 4) 3300 to 4500 (average

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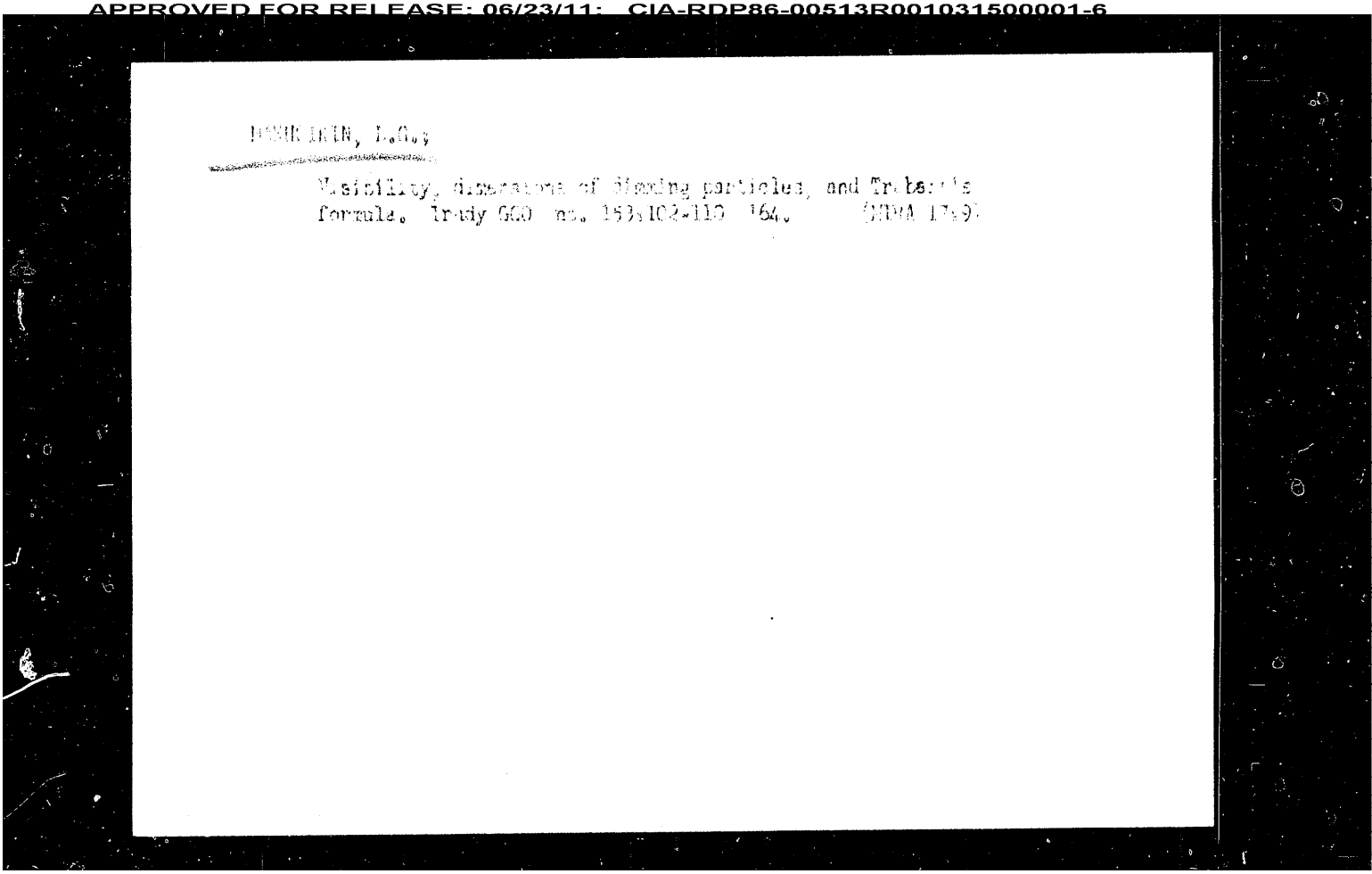

[illegible], L.G.;

Variability, dimensions of flowing particles, and Trabert's formula. Trudy GGO no. 153:102-110 '64. (MIRA 17:9)

MAKHOTKIN, L.G.; LYDZAR, P.S.

Orientative estimation of lighting distances based on amplitudes of atmospherics. Trudy GGO no.146:58-64 '63. (MIRA 17:2)

ACCESSION NR: AT4011517

been directed to convert to these modified units effective January 1, 1961.

ASSOCIATION: Glavnaya geofizicheskaya observatoriya, Leningrad (Main Geophysical Observatory)

SUBMITTED: 00	DATE ACQ: 20Feb64	ENCL: 00
SUB CODE: ES	NO REF SOV: 005	OTHER: 003

Card 2/2

ACCESSION NR: AT4011517 S/2531/63/000/146/0053/0057

AUTHOR: Makhotkin, L.G.

TITLE: Selection of units for processing the data of atmospheric electricity measurements

SOURCE: Leningrad. Glavn. geofiz. observatoriya. Trudy*, no. 146, 1963. Atmosfernoye elektrichestvo, 53-57

TOPIC TAGS: meteorology, atmospheric electricity, electrical field potential gradient, polar air conductance, atmospheric electricity tabulation, tabulation unit selection, simplified tabulation unit

ABATRACT: Monthly tabulations of the electrical field potential gradient V and the polar air conductance $\lambda+$, $\lambda-$, currently expressed in v/m and 10^{-6} esu units, respectively, are subjected to analysis, from which it is concluded that the present tables contain superfluous figures devoid of significance in terms of permissible error factors and present day capabilities. Substitution of v/dm and 10^{-5} esu, respectively, as the units of expression provides fully adequate, yet clearer and less voluminous, data. Accordingly, all observatories of the Gidromtesluzhby* (Hydrometeorological Service) have

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ACCESSION NR: AT4011516

where n_0, N_0 are some normal values of n, N. The author placed special emphasis on the need for the development of a standard ion counter, without which it will be impossible to provide commensurate readings of electrical air pollution characteristics, measured at various places with different equipment. Orig. art. has: 1 table and 11 formulas.

ASSOCIATION: Glavnaya geofizicheskaya observatoria, Leningrad (Main Geophysical Observatory)

SUBMITTED: 00 DATE ACQ: 20Feb64 ENCL: 00

SUB CODE: ES NO REF SOV: 006 OTHER: 001

Card 3/3

ACCESSION NR: AT4011516

(where R is the "electrical factor of air purity", k is the mean mobility of light ions and β is the light ion disappearance constant) and the proposal of Gunn (R. Gunn. The ratio of positive and negative light ion conductivities within a neutral aerosol space. Journal of Colloid Science, vol. 11, No. 6, Dec. 1956) to the effect that data on the polar conductivity λ_+, λ_- be used to characterize air pollution, claiming that it is possible to make an approximate determination of the concentration and size of the particles present (more accurately: the value Nr) on the basis of the ratio $\frac{\lambda_+}{\lambda_-}$. The difficulties and defects of both these methods are discussed. The author concludes that the most suitable electrical characteristic of air pollution resolves to an estimate of the concentration of heavy ions (or, in an extreme hypothesis, the light ion concentration related to it). He recommended, in particular, the factors p and P, proposed by Delyanu (M. Delyanu, Ionizatsiya kak pokazatel' intensivnosti zagryazneniya atmosfernogo vozdukha i zonirovaniya promy*shlenny*kh tsentrov. Gigiena i sanitariya, No. 10, 1960):

$$k \approx \frac{3\lambda}{\lambda + 1{,}5} \qquad (2)$$

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S/2532/63/000/146/0048/0052

ACCESSION NR: AT4011516

AUTHOR: Makhotkin, L. G.

TITLE: Electrical factors in air purity

SOURCE: Leningrad. Glavn. geofiz. observatoriya. Trudy*, no. 146, 1963. Atmosfernoye elektrichestvo, 48-52

TOPIC TAGS: air purity, meteorology, air contamination, light ion, air pollution, atmospheric electricity

ABSTRACT: The author claims that almost all atmospheric-electrical elements depend to some degree on the contamination of the air. By examining certain atmospheric-electrical characteristics, it can be shown that the values of individual parameters are, in some cases, direct functions of air contamination. In this connection, the author considered the possibility of using various electrical characteristics for an appraisal of air purity. First analyzed is the formula proposed by R. A. Allik (Ob elektricheskom faktore chistoty* vozdukha. Trudy* NIU GUGMS, ser. 1, vy*p. 4, 1941)

$$R = \frac{k}{\beta}, \qquad (1)$$

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ACCESSION NR: AT4011515

SUBMITTED: 00	DATE ACQ: 20Feb64	ENCL: 00
SUB CODE: ES	NO REF SOV: 004	OTHER: 003

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ACCESSION NR: AT4011515

refine the characteristics of storm detectors and recalculation factors. In the summer of 1961, observations were made of the change in the statistical field E_S at the time of discharges and of the distance to the discharges. The instrumentation used in these observations is described (two storm recorders operating on different antennas, an electrostatic fluxmeter for electrostatic field recordings, etc.). Approximately 3,200 discharges were recorded, with the distance determined for 500 of them. The authors analyzed the results of the recordings of the statistical fields and the characteristics inherent in the reception of the discharges by the electrostatic instrument and by the storm recorders, and in this way they derived data on the value (magnitude) of the field intensity jump as a function of the distance to the discharge, the distribution of field jumps in magnitude and the effect of the threshold value on the number of discharges received. The claim is made that, thanks to the use of statistical methods, it is possible to relate various experimental information and to trace a path for the processing and interpretation of material derived from the observation of the quantity of thunderstorm discharges. By way of example, the authors calculated the preliminary characteristics of individual devices and found that the results of a comparison of rates and experimental data confirmed the correctness of the statistical arrangement chosen. Orig. art. has: 15 formulas, 5 figures and 1 table.

ASSOCIATION: Glavnaya geofizicheskaya observatoriya, Leningrad (Main Geophysical Observatory).

ACCESSION NR: AT4011515 S/2531/63/000/146/0039/0047

AUTHOR: Makhotkin, L. G.; Semenov, K. A.

TITLE: Statistics of thunderstorm discharges

SOURCE: Leningrad. Glavn. geofiz. observatoriya. Trudy*, no. 146, 1963. Atmosfernoye elektrichestvo, 39-47

TOPIC TAGS: thunderstorm, thunderstorm activity, thunderstorm discharge, storm activity, thunderstorm detection, storm recorder, meteorology, atmospheric electricity

ABSTRACT: Typical peculiarities of individual thunderstorms (the irregularity of their occurrence, the random distribution of discharges in time and in space) determine the need for the application of statistical methods in calculating the mean number of discharges per unit area. Concrete calculations, connected with the determination of the effective radius of storm detection equipment, depend primarily on the function of the amplitude distribution of the atmospherics (according to a logarithmically law). After discussing the possibilities, advantages and disadvantages of investigating the distribution according to other parameters of the discharges (a logarithmically normal quadrant system, for example), the authors claim that on the basis of a knowledge of general statistical laws, special tests may be used to

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ACCESSION NR: AT4011509

20°-30° were observed in the DF'ing of near discharges, this cannot serve as an unqualified proof of the inapplicability of loop antennas. The authors then describe tests conducted in the summer of 1961 at the Leningrad radiogoniometrical point with a unidirectional direction finder equipped with loop antennas. The instrument was designed by P. S. Ly*dzar. The unit was of conventional design. The frames and all three amplifiers (two frame and one antenna) were tuned to 7 kc. In order to check the readins of this local DF unit for the closest discharges, when errors of all kinds are maximum, 25 meters from the point a simple sighting device was set up for visual determination of the azimuths of visible lightning. Information on the direction to the center of each detected lightning discharge was transmitted to the DF point by means of a selsyn bearing indicator. Synchronous observations with the direction-finder and the selsyn bearing indicator were made during the summer of 1961 only in the daytime (1000-2200 hours). It was found that in DF'ing lightning discharges up to 20 km distant, the errors of such a long-wave direction-finder operating with loop antennas and set up under normal conditions did not exceed, in the majority of instances 5-10°. Orig. art. has: 4 tables and 1 figure.

ASSOCIATION: Glavnaya geofizicheskaya observatoriya, Leningrad (Main Geophysical observatory)

SUBMITTED: 00 DATE ACQ: 20Feb64 ENCL: 00

SUB CODE: ES NO REF SOV: 001 OTHER: 003

3/3

Card

ACCESSION NR: AT4011509

a sufficiently large area and because of the high level of artificial interference from radio stations. While the network of cathode DF equipment provides observations over a radius of up to several thousand kilometers, practical requirements call for observations of near discharges with less sensitive equipment, resulting in the levying of different requirements on these "local" DF units, other than merely varying the threshold of sensitivity. The authors point out that requirements for accuracy in azimuth determination are limited by the angular dimensions of the lightning. Navigation DF equipment permits azimuth determination with a mean quadratic error of 1°-2°. In this connection, the authors claim that the solution of the problem posed requires, in the majority of cases, an accuracy only in the order of several degrees, but that, while placing no excess demands on azimuth determination accuracy, care must be taken to avoid any ambiguity in bearing readings, for otherwise the value of the local DF installation is reduced. The authors refer to the work of C. G. Stergis and J. W. Doyle (Location of near lightning discharges. Recent advances in atmospheric electricity. Proceed. of the Second conference on atmospheric electricity. Ed. by L. G. Smith, London, Pergamon Press, 1958) in a discussion of the general characteristics of different antenna systems and the results of tests of a direction-finder using an Adcock antenna. The conclude this discussion with the statement that, although errors of

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ACCESSION NR: AT4011509 S/2531/63/000/146/0010/0016

AUTHOR: Astashenko, A. I.; Makhotkin, L. G.

TITLE: Direction-finding of near lightning discharges

SOURCE: Leningrad. Glavn. geofiz. observatoriya. Trudy*, no. 146, 1963. Atmosfernoye elektrichestvo, 10-16

TOPIC TAGS: lightning, lightning discharge, near lightning discharge, lightning direction detection, lightning detection, loop antenna, meteorology, atmospheric electricity

ABSTRACT: The authors considered data regarding the need for the selection of special circuitry for a near-discharge (to 200 km) direction-finder (DF), and showed that these data were not supported by the results of the testing of a unidirectional direction-finder using loop antennas (also referred to as "frame" or "coil" antennas). Conventional type direction-finders preserve unidirectivity and, in the majority of cases, have practically acceptable errors even at the very smallest distances (to 20 km. During the last war, in the USA, due to a lack of special DF equipment, an attempt was made to use standard navigational DF units operating on short waves for DF'ing atmospherics; the attempt was unsuccessful as a consequence of the propogation peculiarities of short waves which made it impossible to encompass

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ACCESSION NR: AT4011508

fashion and their interpretation is discussed in the article. The authors point out that, when employing storm activity charts, it should not be forgotten that such charts characterize the general level and not the maximum force of individual thunderstorms. Orig. art. has: 1 table and 4 figures.

ASSOCIATION: Glavnaya geofizicheskaya observatoriya, Leningrad (Main Geophysical Observatory)

SUBMITTED: 00	DATE ACQ: 20Feb64	ENCL: 00
SUB CODE: ES	NO REF SOV: 003	OTHER: 001

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that instrument No. 5 was activated at storms distant to 200 km, No. 4 — to 150 km, No. 3 — to 100 km, No. 2 — to 50 km and No. 1 — to 15 km. A total of 6,000 readings were made during the daytime (from 0900 to 2100 h.) in a period embracing almost the entire storm period. The charts presented in this article were then compiled on the basis of a statistical processing of the information derived from these readings. The authors note, however, that charts obtained as a result of the standardized processing of information derived from observations by radar or atmospherics may differ from one another if there is a variation in the probability of a transition of heavy-rain clouds into thunderstorm clouds as a function of local conditions. As indicated in one of the latest (at the time of the article's writing) recommendations of the World Meteorological Organization, thunderstorms and heavy showers cannot be distinguished on the basis of radar observations. After an experimental chart of thunderstorm activity had been compiled, observational data were collected for the 1961 summer season and a calculation was made of the sum duration of daytime thunderstorms in hours (from 15 June through the end of August). Thanks to the availability of a rather closely-knit network (more than 40 stations), these data made it possible to compile a separate chart for storm duration which was combined with a chart drawn up according to observations of atmospherics at one point. Other charts were also compiled in a similar

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ACCESSION NR: AT4011508 S/2531/63/000/146/0003/0009

AUTHOR: Astashenko, A. I.; Ly*dzar, P. S.; Makhotkin, L. G.

TITLE: Thunderstorm activity in the Leningrad region in 1961

SOURCE: Leningrad. Glavn. geofiz. observatoriya. Trudy*, no. 146, 1963. Atmosfernoye elektrichestvo, 3-9

TOPIC TAGS: thunderstorm activity, thunderstorm, thunderstorm recorder, atmospheric electricity, meteorology

ABSTRACT: Summarized in this article are the results of observations conducted in the summer of 1961 by means of a unidirectional direction-finder and a complex of thunderstorm recorders. Characteristic peculiarities in the distribution of storms are noted and charts, obtained by various methods, are compiled. In the summer of 1961, at the radio-goniometrical point at Voyeykovo, observations were made of thunderstorms within a radius of up to 200 km with the help of a unidirectional cathode direction-finder and a set of monotype thunderstorm discharge counters of various sensitivity. For purposes of an approximate determination of the distance to the storm, the authors used an empirically found dependence of atmospherics (in amplitude) on the remoteness of the source of discharges. The storm-recorder complex consisted of five instruments, with their sensitivity levels so selected

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ASTASHENKO, A.I.; LYDZAR, P.S.; MAKHOTKIN, L.G.

Thunderstorm activity in Leningrad Province in 1961. Trudy GGO no.146:3-9 '63. (MIRA 17:2)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031500001-6

MAKHOTKIN, L.G.

Statistics of atmospheric radionoises. Geomag. i aer. 3 no.2: 284-292 Mr-Ap '63. (MIRA 17:2)

1. Glavnaya geofizicheskaya observatoriya.

ACCESSION NR: AT4011518

Data recorded by several instruments greatly enhance the value of observations. Orig. art. has: 11 formulas, 1 figure and 3 tables.

ASSOCIATION: GLAVNAYA GEOFIZICHESKAYA OBSERVATORIYA, LENINGRAD (Main Geophysical Observatory)

SUBMITTED: 00	DATE ACQ: 20Feb64	ENCL: 00
SUB CODE: AS	NO REF SOV: 007	OTHER: 004

Card 2/2

ACCESSION NR: AP4011518 S/2531/63/000/146/0058/0064

AUTHOR: Makhotkin, L. G.; Ly*dzar, P. S.

TITLE: Approximate estimate of thunderstorm distance from amplitudes of atmospherics

SOURCE: Leningrad. Glavn. geofiz. observatoriya. Trudy*, no. 146, 1963. Atmosfernoye elektrichestvo, 58-64

TOPIC TAGS: atmospheric radio noise, atmospherics, thunderstorm, lightning flash recorder, lightning, meteorology

ABSTRACT: It is demonstrated on the basis of experimental and theoretical data that the logarithm of distance to nearby thunderstorms can be estimated approximately. The scale for estimation of distance approximately corresponds to a geometric progression with the denominator 2. The work of Imyanitov and Horner in this field is discussed. The possibility of such an estimate from a single station using a set of very simple instruments (lightning recorders) is confirmed by the authors by computations. When several thunderstorms are situated along a single azimuth from the station it is only possible to determine distance to the nearer center of activity. Stations where lightning recorders are used should always have several identical instruments with different triggering thresholds.

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where $P_t(E_o)$ is the relative time during which the atmospheric radio noise exceeds the level E_o, C or C* is a certain coefficient and q is the distribution parameter. The coefficient C* is the noise level which is exceeded for 50% of the time. The theoretical formula was found to be in reasonable agreement with the experimental data obtained in the region of Leningrad during summers of 1961 and 1962. There are 1 figure and 1 table.

ASSOCIATION: Glavnaya geofizicheskaya observatoriya (Main Geophysical Observatory)

SUBMITTED: September 14, 1962

S/203/63/003/002/012/027
D207/D307

AUTHOR: Makhotkin, L.G.

TITLE: Statistics of atmospheric radio noise

PERIODICAL: Geomagnetizm i aeronomiya, v. 3, no. 2, 1963, 284-292

TEXT: The author derives the distribution of atmospheric noise on the following assumptions: a) the average number of lightning discharges in the air per unit time and per unit area is independent of the distance R to the point where measurements are carried out; b) the electric field intensity in the atmosphere is proportional to a power of the reciprocal of the distance R; c) each separate source of noise generates signals whose amplitudes at a fixed distance R_1 exceed a certain threshold value with a specified probability. The theoretical distribution is found to be identical with the empirical one for frequencies below 100 kc/s:

$$P_t(E_0) = \frac{C}{C + (E_0)^q} = \left[1 + \left(\frac{E_0}{CF}\right)^q\right]^{-1}, \qquad (1)$$

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MAKHOTKIN, L.G.

A private evaluation of the electric coagulation of water droplets. Khidro i meteorolog no.6:60-61 '62.

Electric charges of ...

4 which gives the interval distribution for the frequency of values of the parameter p; the lines are drawn on the probability grid developed by N.A. Fuks (Ref. 6: Mekhanika aerozoley, Izd. Akad. Nauk SSSR, Moscow, 1955), and Numbers 1 - 3 respectively denote the El'brus, Voyeykovo and aircraft measurements. p is the proportional ratio of the charge of a droplet to its radius, i.e.:

$$p = \frac{\epsilon}{kT} \cdot \frac{q}{r} \qquad (1)$$

where k is the Bolzman constant, T is the absolute temperature assumed to be equal to 300° and ϵ is the electron charge. There are 4 figures, 1 table and 7 references: 5 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: S. Twomey, The electrification of individual cloud droplets. Tellus, 8, No. 4, 1956; B. Phillips, G. Kinzer, Measurement of the size and electrification of droplets in cumuli clouds. J. Meteorol., 15, No. 4, 1958.

ASSOCIATION: Akademiya Nauk SSSR, institut prikladnoy geofiziki, glavnaya geofizicheskaya observatoriya im A.I. Voyeykova (Academy of Sciences, Institute of Applied Geophysics, Central Geophysical Observatory, im A.I.

Electric charges of ...

droplets. The authors then describe the aircraft, El'brus, Voyeykovo and balloon measurements in detail. Fig. 1 shows that droplets with a radius of $<6 - 8\ \mu$ predominate in clouds and those with a radius of $>6\ \mu$ in fogs, although there were fogs with particles having a mean radius of $4 - 5\ \mu$. The recording of all visually observed small droplets in the Solov'yev and Petrov methods was restricted by the quality of the photofilm that was used. This work clarified the apparently linear relationship between the mean charges and sizes of cloud droplets illustrated in Fig. 2. The frequency of the various values of q on cloud and fog droplets is depicted below in Fig. 3 which shows the charge distribution for these particles. When plotting this graph only the data on the charges of fog droplets were used; the ordinate corresponds to droplets with a charge of less than 10 units. This necessitated the presentation of comparable data since no uncharged particles were recorded in the El'brus and balloon measurements. The mean charge values for fog and cloud droplets are given in tabulated form. The straight lines plotted from these data are shown in Fig.

Electric charges of ...

the potential gradient of the electric field in fog equals about 150 V/m, the overall conductivity being a little below $1 \cdot 10^{-4}$ erg sajene units. The measurements in stratus and strato-cumulus clouds were carried out on the slope of E'brus by the method described by A.P. Sergiyeva (Ref. 2: Ob elektricheskikh zaryadakh oblachnykh chastits, Izv. Akad. Nauk SSSR, ser. geofiz., No. 3, 1958); the apparatus does not record neutral droplets. In persistent clouds there was little variation in the field strength in the 100 - 300 V/m limits of the mean values. Measurements were later made at a temperature of about 0^0 in strato-cumulus clouds at an altitude of 300 m near Moscow by the same apparatus mounted in a balloon; at the end of the measurements there were ice particles in the clouds. Particle charges in many stratus and strato-cumulus near Belaya Tserkov' were measured by equipment fixed in an aircraft. This method has been described by G.D. Petrov (Ref. 3: Metodika izmereniya zaryadov i razmerov aerozol'nykh chastits s samoleta, Izv. Akad. Nauk SSSR, ser. geofiz., No. 11, 1959). It differs considerably from the other two methods and records both charged and neutral

23461

S/049/61/000/001/008/008
D226/D306

3,5100

AUTHORS: Katsyka, A.P., Makhotkin, L.G., Petrov, G.D., and Chzhao Bo-Lin

TITLE: Electric charges of cloud and fog droplets

PERIODICAL: Akademiya nauk SSSR. Seriya geofizicheskaya. Izvestiya, no. 1, 1961, 162 - 165

TEXT: Variations in the charge of separate liquid-cloud and fog particles were made independently by means of various procedures on a plain, on the slope of El'brus, in an aircraft and in a balloon. The method used for measurements in fogs, developed by V.A. Solov'yev (Ref. 1: Ob odnom metode izmereniya zaryadov i razmerov kapel' tumanov, Tr. GGO, vyp. 58 (120), 1956), guaranteed the recording of both charged and uncharged particles. The measurements were carried out by means of two sets of equipment at Voyeykovo near Leningrad, the reception apparatus being 1 meter above the ground. According to the observational data here the mean value of

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Electrical characteristics of the ...

conclusions previously obtained were repeated in a number of works. The importance of the formulae is not that they replace measurements by calculations, but that they serve to check the correctness and completeness of description of micro-processes in fog, and establish general assessments and relationships between the various characteristics. The meteorological characteristic of visibility range may be associated with the atmospheric electrical characteristic of light ion concentration. Experimental data concerning the charges on fine drops of fog are in good agreement with experimental results measured in clouds on the mountain Elbruss by a completely different method. 9 references.

[Abstractor's note: Complete translation.]

Card 2/2

S/196/62/000/022/005/007
E194/E155

3.6100

AUTHORS: Makhotkin, L.G., and Solov'yev, V.A.

TITLE: Electrical characteristics of the atmosphere during fog

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.22, 1962, 29, abstract 22 E 199. (In collection: "Issled. oblakov, osadkov i grozovogo elektrichestva" ('Investigations of clouds, precipitation and atmospheric electricity'), Moscow, AN SSSR, 1961, 219-224).

TEXT: In fog, when the electrical properties of the atmosphere are significantly different from normal, the potential gradient is greater, the air conductivity is much reduced and the concentration of light ions is lower. Until recently, few detailed results of observations made during fog have been available. The significance of theoretical calculations made in the Laboratoriya aerozoley (Aerosol Laboratory) of the Fiziko-khimicheskiy institut imeni Karpova (Physicochemical Institute imeni Karpov) twenty years ago was recently evaluated and the

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occurring in the atmosphere and on the active surface. Individual articles on the following topics are included: light dispersion in a two-layered atmosphere, comparative analysis of sighting conditions under a cloudy and a cloudless sky, investigation of long-wave radiation of the atmosphere, electronic temperature controller, aircraft instruments for measuring the spectral optical characteristics of the atmosphere and the underlying surface, and the dependence of long-wave atmospheric radiation upon the meteorological elements. References accompany each article.

TABLE OF CONTENTS:

MAKHOTKIN, L. G.

PHASE I BOOK EXPLOITATION SOV/4147
SOV/2-5-100

Leningrad. Glavnaya geofizicheskaya observatoriya

Issledovaniye radiatsionnykh protsessov (Investigation of Radiation Processes). Leningrad, Gidrometeoizdat, 1960. 197 p. (Series: Its: Trudy, vyp. 100) Errata slip inserted. 1,000 copies printed.

Additional Sponsoring Agency: USSR. Glavnoye upravleniye gidrometeorologicheskoy sluzhby.

Ed. (Title page): K.S. Shifrin, Doctor of Physics and Mathematics, and V.L. Gayevskiy, Candidate of Geography; Ed. (Inside book): L.P. Zhdanova; Tech. Ed.: M.I. Braynina.

PURPOSE: The publication is intended for meteorologists and students of hydrometeorology at higher technical schools.

COVERAGE: This issue of the Transactions of the Main Geophysical Observatory imeni A.I. Voyeykov contains 27 articles on investigations of the radiation processes

Card 1/6

PHASE I BOOK EXPLOITATION SOV/4316
SOV/2-S-97

Leningrad. Glavnaya geofizicheskaya observatoriya

Voprosy atmosfernogo elektrichestva (Problems in Atmospheric Electricity) Leningrad, Gidrometeoizdat, 1960. 115 p. (Series: Its: Trudy, vyp. 97) Errata slip inserted. 1,000 copies printed.

Sponsoring Agency: USSR. Glavnoye upravleniye gidrometeorologicheskoy sluzhby.

Ed. (Title page): I.M. Imyanitov, Candidate of Physics and Mathematics; Ed. (Inside book): T.V. Ushakova; Tech. Ed.: N.V. Volkov.

PURPOSE: This publication is intended for meteorologists and scientists concerned with the problem of atmospheric electricity. The book can also be used by graduate students at hydrometeorological institutes and by university students studying physics of the atmosphere.

COVERAGE: This issue of the Transactions of the Main Geophysical Observatory im. A.I. Voyeykov contains works on problems in atmospheric electricity written from 1954 to 1958. Individual articles deal with the electrical phenomena associated with thunderstorms, clouds, rains, and fogs. Observational techniques and instruments used are described. No personalities are mentioned. References accompany individual articles.

AVAILABLE: Library of Congress

Card 4/4

JA/dwm/mas
10-14-60

MAKHOTKIN L.G.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031500001-6

SOV/169-60-3-2686

On Computing the Possible Diurnal Amounts of Direct Radiation

in his work (RZhGfiz, 1957, Nr 12, 10445) the coefficients α connecting Q'_B and the amounts of the direct solar radiation incident onto a perpendicular surface (Q_B). Tables of the α values are added, which are obtained on the basis of very diverse initial data. The continuity of the α values is sufficient for a number of practical applications. The method of graphical computation of Q'_B by a formula proposed by the author (RZhGfiz, 1957, Nr 12, 10445) is described.

N.V.Z.

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SOV/169-60-3-2686

Translation from: Referativnyy zhurnal, Geofizika, 1960, Nr 3, p 95 (USSR)

AUTHOR: Makhotkin, L.G.

TITLE: On Computing the Possible Diurnal Amounts of Direct Radiation

PERIODICAL: Tr. Gl. geofiz. observ., 1959, Nr 80, pp 23 - 31

ABSTRACT: The calculations by series of the possible diurnal amounts of direct solar radiation (Q'_B) turn out an operation inconvenient in practice. In particular, the calculations by the formulae proposed by M.S. Malkevich (RZhGfiz, 1957, Nr 5, 4212) do not lead to unambiguous results and the error amounts to 13% and higher, if 5 terms only of the series are used. In order to calculate Q'_B, a polynomial of the following form is useful:

$$Q'_B = Q'_o - C_1 (1-p) + C_2 (1-p)^2,$$

wherein p is the transmission coefficient, C_1, C_2 are constant coefficients. The results of calculations by the proposed formula agree well with the results obtained by numerical integration and are less cumbersome. The author has proposed

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On C. G. Breydo's Formula for the Limiting Charge on Drops

the rate of charging ($dq/dt = \beta q$), q is the charge on a drop, t is the time, and r is the drop radius. Apart from the error which Breydo made in one of her papers (Ref 2), her results are important because they prove the necessity of allowing for the effects of wind by the introduction of the wind coefficient. There are 7 references, 4 of which are Soviet, 2 English and 1 German.

ASSOCIATION: Glavnaya geofizicheskaya observatoriya im A. I. Voyeykova
(Main Geophysical Observatory imeni A. I. Voyeykov)

SUBMITTED: January 10, 1958.

On C. G. Breydo's Formula for the Limiting Charge on Drops

Gunn verified his results experimentally (Ref 6). Breydo did not really follow Frenkel's reasoning, and produced a new formula. Since in addition to the Frenkel'-Gunn formula there is a further formula reported by Arendt and Kallmann (Ref 7), the author collected and critically discussed theoretical and experimental material on charging of drops in the presence of wind. This led the author to the conclusion that both theoretical considerations and experimental data confirm the Frenkel'-Gunn formula. In the special cases of very small droplets or low concentrations of ions, formulae of the type given by:

$$q' = (D/w)\left[\ln\left(1 + \frac{4\pi\varepsilon w\bar{n}}{\beta}\right)\right] r \qquad (4)$$

may be used. The symbols in this equation have the following meanings: D is the coefficient of diffusion of ions, w is the mobility of ions, ε is the charge of a single ion, $\bar{n}$ is the value of ion density at large distances from a drop, β is a constant in the equation which gives

SOV/49-59-2-23/25

AUTHOR: Makhotkin, L. G.

TITLE: On C. G. Breydo's Formula for the Limiting Charge on Drops (O formule Ts. G. Breydo dlya predel'nogo zaryada kapel')

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1959, Nr 2, pp 330-331 (USSR)

ABSTRACT: C. G. Breydo carried out interesting experiments on adsorption of ions by drops of water (Ref 1) and then gave a theoretical generalisation of the results obtained (Ref 2). Breydo's aim was to supplement the Frenkel' diffusion theory of charging of drops by the introduction of a coefficient which allows for the effect of wind. If Breydo followed the Frenkel' theory, it should be possible to obtain the latter's formula for the limiting charge on a drop (Ref 3) by substituting a wind coefficient equal to unity into Breydo's formula: (the author points out that there is an accidental error in Frenkel's book - Ref 4). Gunn (Ref 5) published a paper on charging of atmospheric droplets by ions almost simultaneously with Breydo, and he also introduced the wind coefficient. Gunn found that substitution of a wind coefficient equal to unity did in fact yield the Frenkel' formula;

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Study of Radiation Processes SOV/2548

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are shown. Individual articles deal with the methodology of actinometric observations. No personalities are mentioned. References accompany each article.

TABLE OF CONTENTS:

МАКНОТКИН L.G.

3(7); 24(3) PHASE I BOOK EXPLOITATION SOV/2548

Leningrad. Glavnaya geofizicheskaya observatoriya

Issledovaniye radiatsionnykh protessov (Study of Radiation Processes) Leningrad, Gidrometeoizdat, 1959. 142 p. (Series: Its Trudy, vyp. 80) Errata slip inserted. 1,200 copies printed.

Sponsoring Agency: Glavnoye upravleniye gidrometeorologicheskoy sluzhby pri Sovete Ministrov SSSR.

Ed. (Title page): V. L. Gayevskiy, Candidate of Geographical Sciences; Ed. (Inside book): V. D. Pisarevskaya; Tech. Ed.: A. N. Sergeyev.

PURPOSE: This book is intended for geophysicists and engineers studying radiation phenomena. 3

COVERAGE: This collection of articles treats problems in optics of the atmosphere and actinometry. Results of theoretical and experimental investigations of visibility range, transparency of the atmosphere, and the radiation regime of both the active surface and the atmosphere

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MAKHOTKIN, L.G.; SOLOV'YEV, V.A.

Role of electric charge in the coagulation of fog droplets. Trudy GGO no.73:116-122 '58. (MIRA 11:9)
(Atmospheric electricity) (Fog)

Direct radiation and the transparency of the atmosphere.(Cont.)

The following procedure is then adopted. If with the mass m^* the intensity is I^* then, using the "normal" curve, we can find the value of log m for which $I^* = I$ and hence we have the displacement of a curve as the difference log m - log m^*. An index of turbidity N is defined by

$$N = 10^{\Delta} = m/m^*$$

This index (in contradistinction to the usual turbidity factors T and θ) shows how many normal atmospheres it is necessary to take at given m to get the given I. A real and not ideal atmosphere is taken as the standard. An estimate of the relations between the possible daily direct insolations on perpendicular and horizontal surfaces leads to a determination of the "mean mass" and hence to a simple method for the determination of the daily insolation on the horizontal surface. Thereby, the dependence of the latter on the transparency of the atmosphere is also determined.

SUBMITTED: July 3, 1956. There are 4 figs., 3 tables and 14 refs. of which 11 are Slavic.

ASSOCIATION: Chief Geophysical Observatory imeni A. I. Voyeykov. (Glavnaya Geofizicheskaya Observatoriya im.A.I.Voyeykova).

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Direct radiation and the transparency of the atmosphere.(Cont.)

can be represented by:

$$I \approx c - b \lg m$$

where b should be the same for all x because of the constancy in form of the graph of I vs. $\log m$. The similarity in form mentioned above was confirmed experimentally by the author for the quasi-linear part of the I vs. $\log m$ curve in earlier work (4). This result is now extended to the entire curve. Fig.2 shows that curves obtained at different values of the coefficient of transparency can be made to coincide by a simple translation Δ_x without change of scale. Therefore, if a "normal" I vs. $\log m$ curve is agreed upon a single measurement of I will yield the quantity Δ_x which is the displacement necessary to place the particular point on the normal curve. The "normal" curve of I vs. $\log m$ based on a large number of observations at Karadag is shown in Fig.3 (N.B. the scale is not uniform).

Card 2/3 The normal curve can be represented by

$$I = 0.5\,(I - 0.8)^3 = 1.41 - 1.11 \log m$$

where I is in cal. cm^{-2} $min.^{-1}$ and the log is to the base 10.

AUTHOR: Makhotkin, L. G. 49-5-9/18

TITLE: Direct radiation and the transparency of the atmosphere. (Pryamaya radiatsiya i prozrachnost' atmosfery).

PERIODICAL: "Izvestiya Akademii Nauk, Seriya Geofizicheskaya" (Bulletin of the Ac.Sc., Geophysics Series), 1957, No.5, pp. 644-657 (U.S.S.R.)

ABSTRACT: The intensity of direct solar radiation reduced to the mean Earth-Sun distance is often represented in the functional form:

$$I = \varphi(mx)$$

where m is the mass of the atmosphere at the moment of observation and x some characteristic of the transparency of the atmosphere. In particular, one meets with the following form:

$$I = \varphi(mx) = \varphi\ (\lg m + \lg x)$$

Thus, graphs of I vs. log m should be of similar form for different constant values of x (Fig.1). In addition, experiments show the existence of a quasi-linear path in the I vs log m curves as shown in Fig.1. The linear part

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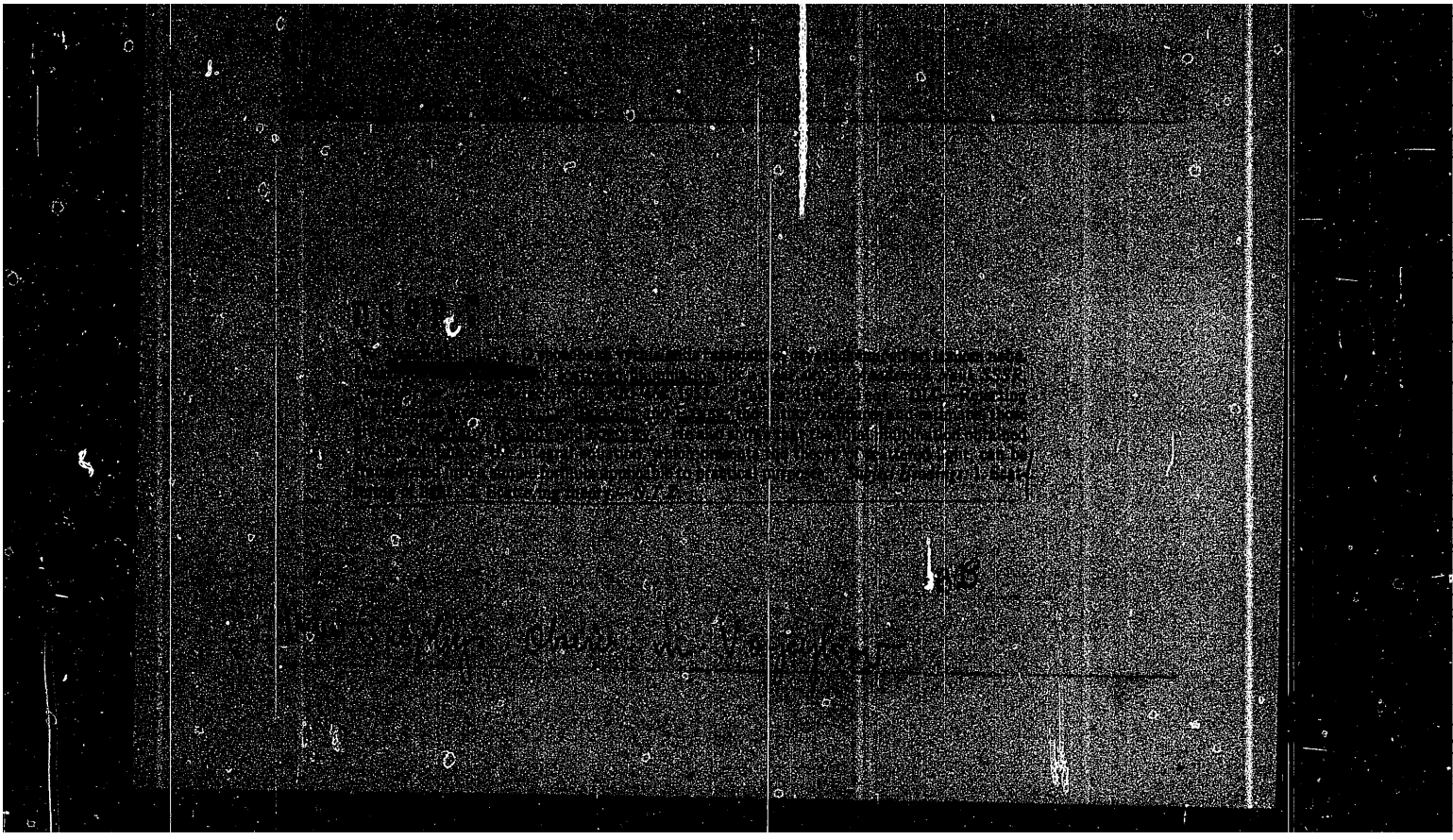

MAKHOTKIN, L.G.

Effect of the magnetic field on ionospheric radio wave reflection.
Trudy GGO no.35:29-34 '52. (MIRA 12:1)
(Ionospheric radio wave propagation)
(Magnetism, Terrestrial)

AUTHOR: Makhotkin, G., Engineer

S/084/63/000/003/002/002
A004/A127

TITLE: Amphibious aerosledge

PERIODICAL: Grazhdanskaya aviatsiya, no. 3, 1963, 28 - 29

TEXT: Following the request of several readers of this periodical, the author presents the basic parameters of an amphibious aerosledge and its power plant, and point out that a prototype of such an aerosledge is being tested at present by the Ministry of Communications of RSFSR. These tests proved the expediency of designing aerosledges according to the hydroglider principle, which ensures optimum operation characteristics. The author gives the dependence of the propeller diameter on the maximum engine capacity, determining the thrust, the optimum weight of the aerosledge for a given engine power and the dependence of the relative resistance $\bar{Q} = \frac{\sum Q}{G}$ on the amphibious aerosledge speed. A general sketch of an amphibious aerosledge, a number of graphs and appropriate calculation formulae are presented. There are 5 figures.

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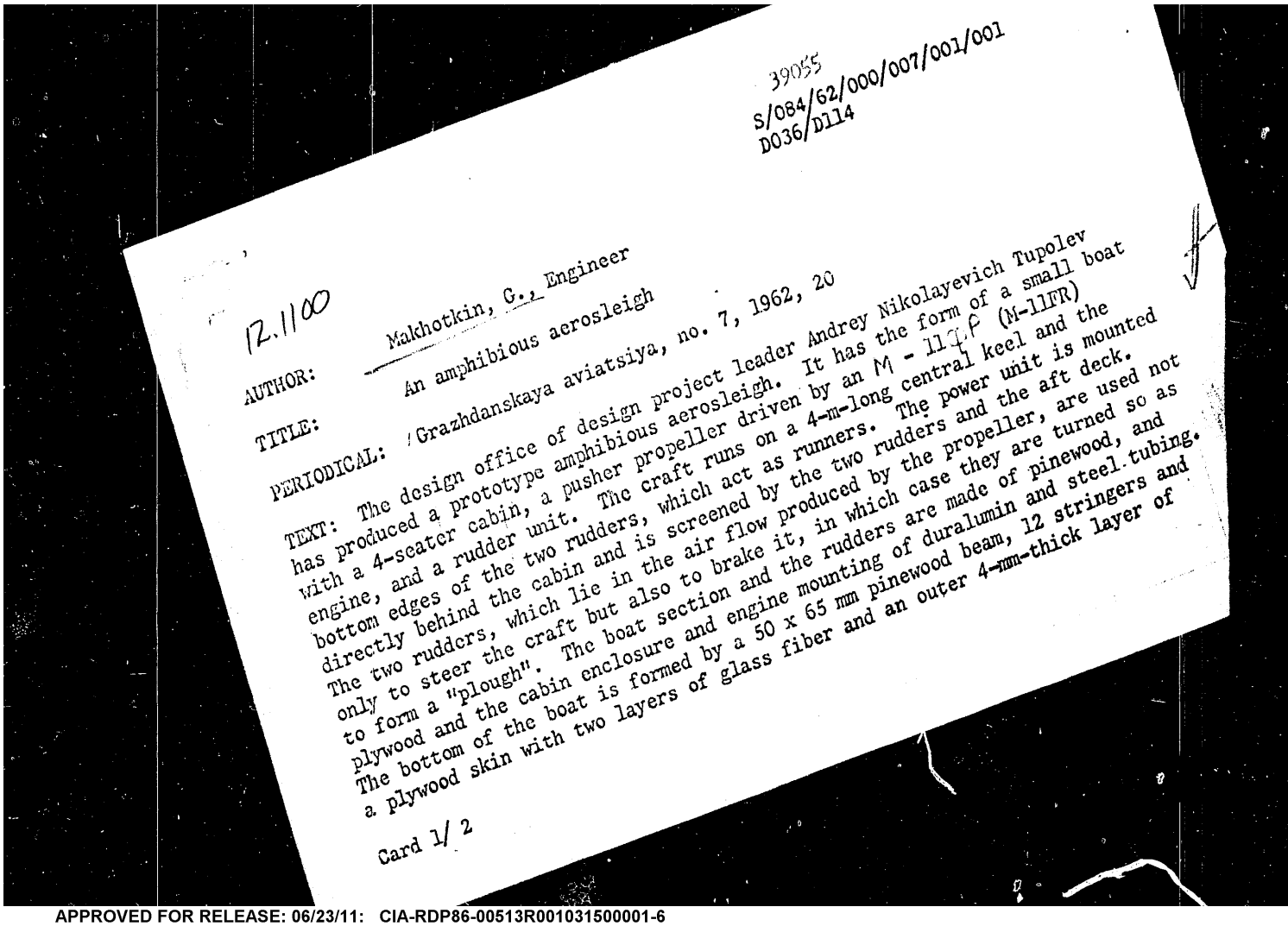
polyethylene. The propeller, specially designed for the aerosleigh, consists of two airscrews placed one behind the other so that a profiled slot is formed between them. It can develop 20-30% more thrust than existing propellers. The sleigh can travel on snow, rivers, swampy ground and snow-covered undergrowth. Due to its small dimensions - width 2100 mm, height to propeller tip 2120 mm, height to cabin top 1400 mm - it can also travel in sparse forest-land. Its turn radius in the loosest snow is 4 m. At -10°C its maximum speed on snow was 120-130 km/hr, and its cruising speed 45-60 km/hr (engine rpm 1250-1450). On water its maximum speed should be 70-75 km/hr and its cruising speed 45-50 km/hr. Fuel consumption is 10-15 l/hr. In tests it showed good running and operating characteristics. The experience gained in designing it showed that there are wide prospects for further improving aerosleigh design. Mass-produced two- or single-seater models would cost less than a motor-cycle. An all-metal version of the aerosleigh is now being developed. There are 3 figures.



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AUTHOR: Makhotkin, G., Engineer

TITLE: An amphibious aerosleigh

PERIODICAL: Grazhdanskaya aviatsiya, no. 7, 1962, 20

TEXT: The design office of design project leader Andrey Nikolayevich Tupolev has produced a prototype amphibious aerosleigh. It has the form of a small boat with a 4-seater cabin, a pusher propeller driven by an M - 11Ф (M-11FR) engine, and a rudder unit. The craft runs on a 4-m-long central keel and the bottom edges of the two rudders, which act as runners. The power unit is mounted directly behind the cabin and is screened by the two rudders and the aft deck. The two rudders, which lie in the air flow produced by the propeller, are used not only to steer the craft but also to brake it, in which case they are turned so as to form a "plough". The boat section and the rudders are made of pinewood, and plywood and the cabin enclosure and engine mounting of duralumin and steel tubing. The bottom of the boat is formed by a 50 x 65 mm pinewood beam, 12 stringers and a plywood skin with two layers of glass fiber and an outer 4-mm-thick layer of

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MAKHOTINA, T.A.

Felty's syndrome. Nauch.trudy Chetv.Mosk.gor.klin.bol.' no.1:341-346 '61. (MIRA 16:2)

1. Iz Moskovskoy gorodskoy klinicheskoy bol'nitsy No.4 (glavnyy vrach G.F. Papko) i kafedry gospital'noy terapii 2-go Moskovskogo gosudarstvennogo meditsinskogo instituta (zav. kafedroy - prof. P.Ye. Lukomskiy).

(ARTHRITIS, RHEUMATOID)

MAKHOTINA, N.G

GUREVICH, Boris Samsonovich; MAKHOTINA, Nina Grigor'yevna; SHURIK, Rakhil Mlyukomovna; BORISOVA, G.A., red.; SUDAK, D.M., tekhn. red.

[Fur articles, sheepskin coats, knit goods, sundries, perfumes and cosmetics; student manual for merchandise departments of institutes of Soviet commerce] Tovary: Pushno-mekhovye, ovchinno-shubnye, trikotazhnye, galanterejnye, parfiumerno-kosmeticheskie; uchebnoe posobie dlia tovarovednykh otdelenii tekhnikumov sovetskoi torgovli. Moskva, Gos. izd-vo torg. lit-ry, 1957. 288 p.
(Commercial products) (MIRA 11:7)

MAKHOTINA, A. I.

21041 Makhotina, A. I. Pozdniye operatsii po povodu posledstuiy ognostrel'nykh povrezhdeniy periphericheskikh neruov. Trudy In-ta (Kazansk. Nauch.-issled. IN-T ortopedii i vosstanovit. Khirurgii), t. 111, 1949, s. 137-48.

SO: LETOPIS ZHURNAL STATEY - Vol. 28, Moskva, 1949

MAKHOTIN, Yu.M.

Growth, reproduction and distribution of bream in Kuybyshev Reservoir. Vop. ekol. 5:130 '62. (MIRA 16:6)

1. Tatarskoye otdeleniye Gosudarstvennogo nauchno-issledovatel'skogo instituta ozernogo i rechnogo rybnogo khozyaystva.
(Kuybyshev Reservoir--Bream)

MAKHOTIN, Ye.A., inzh.; PISHCHIKOV, R.S., inzh.; FILIPPOV, F.P., inzh.

New earthmoving machinery for water management construction.
Trudy Giprovodkhoza no.25:41-51 '63. (MIRA 18:6)

MAKHOTIN, Ye.

School, plant and vocation. Sov. profsoiuzy 19 no.14:8-11 Jl '63. (MIRA 16:9)

1. Predsedatel' zavodskogo komiteta Moskovskogo stankostroitel'nogo zavoda imeni Sergo Ordzhonikidze.
(Moscow--Machinery industry workers--Education and training)